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General Administration/External Affairs

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March 22, 1993

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Office of the Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: ET Docket No. 93-7

Dear Sir or Madam:

Enclosed for filing in the matter noted above are an original and nine copies of the Comments of Matsushita Electric Corporation of America on Compatibility Between Cable Systems and Consumer Electronics Equipment.

We have also enclosed an additional copy to be date stamped and returned with the messenger for our files.

Thank you for your assistance with this matter.

Very truly yours,

F. JACK PLUCKHAHN
Vice President

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
Implementation of Section 17 of the Cable Television Consumer Protection and Competition Act of 1992	)	ET Docket No. 93-7
	)	
Compatibility Between Cable Systems and Consumer Electronics Equipment	)	

COMMENTS OF
MATSUSHITA ELECTRIC CORPORATION OF AMERICA
ON COMPATIBILITY BETWEEN CABLE SYSTEMS
AND CONSUMER ELECTRONICS EQUIPMENT

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Dated: March 22, 1993

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SUMMARY OF COMMENTS

Matsushita Electric Corporation of America ("MECA")

[redacted]

- Non-security encryption technologies, such as signal compression, digitization, and re-channelization, must be standardized so that TV and VCR manufacturers can provide products on a national, effective, and cost-efficient basis.

As to longer-term considerations, the Commission should address the fundamental changes raised by new digital technologies and high definition television formats. These advances should be standardized to preserve compatibility:

- The Commission should require standard frequencies, picture coding, compression, modulation, and multiplexing methods for cable services that depart from NTSC formats.
- The Commission should also strive to achieve maximum compatibility among new standards for broadcast, cable, and other television program delivery media.

To prevent compatibility problems from growing worse through sheer diversity of approach, the Commission needs to start now to regulate all forms of wired and wireless cable transmission technologies, present and future. With standards, new TVs and VCRs can be designed compatibly in each respect; and, "universal" converter boxes can be offered on a national, competitive retail market to assist older sets.

In compelling this proceeding, Congress specifically intended to preserve full functionality of integrated television receivers and VCRs. To this end, Congress gave the FCC authority over all means of cable encryption. MECA respectfully urges the Commission to use this authority to move toward technical harmony between cable services and integrated, fully featured, consumer electronics products, rather than technical entropy and the eventual destruction of a competitive market in consumer electronics products.

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COMMENTS OF
MATSUSHITA ELECTRIC CORPORATION OF AMERICA
ON COMPATIBILITY BETWEEN CABLE SYSTEMS
AND CONSUMER ELECTRONICS EQUIPMENT

Matsushita Electric Corporation of America ("MECA") respectfully submits these comments in response to the Federal Communications Commission ("FCC" or "Commission") Notice of Inquiry issued on January 29, 1993, in the above-captioned proceeding. The Commission invited comments on the nature and extent of the compatibility problems encountered by consumers with respect to cable television systems and consumer electronics products. It asked for both information and proposed solutions as to present problems and future technology.

INTRODUCTION

MECA, through U.S. affiliates, manufactures televisions and picture tubes in the United States, and sells a variety of consumer electronics products under the commonly known brand names of Panasonic, Quasar and Technics. We are proud of our contributions to the evolution of TV and VCR technology.

MECA's corporate philosophy is that the company exists to serve society, and that the interests of the consumer should always come first. Putting the consumer first means not only using the best available technology, but using it in a way that truly serves the convenience of the user.

MECA has a direct and immediate interest in this proceeding. Increasingly, customers for Panasonic and Quasar televisions and VCRs are cable customers, as well. In our view, neither industry could continue to serve these customers well if it were to proceed without appropriate regard for the needs and practices of the other. Complaints from many of

television broadcast services. The measure, throughout, ought to be achievable levels of consumer service and satisfaction.

This Proceeding Marks a Turning Point

To MECA, this proceeding is about much more than whether a particular TV or VCR feature can operate more easily in a particular cable system. Such questions are important, and alone would have justified last year's legislation and the present proceeding. But the problems that triggered this proceeding are only a glimpse of things to come. Bearing down on everyone -- signal providers, consumer electronics

integral tuners. Consumers, rightly, will not wish to pay for operations that are at best redundant and at worst useless.

Without integral tuners, televisions and recorders cease to empower or intrigue the user. Products cannot be used or even demonstrated without the aid of locally procured proprietary devices. Functions can be neither integrated nor programmed. There would be neither a national nor a competitive market in the proprietary devices necessary to make television work, so competition to improve customer service would cease. In introducing the amendment to Senate Bill 12 that eventually became Section 17 of The Television Consumer Protection and Competition Act of 1992 (the "Cable Act"), [1/] Senator Leahy emphasized that such a loss of product

terrestrial broadcasts and the efficiency of the world's largest market. The result has been equipment whose real price has steadily declined, as its quality and reliability have steadily increased. Yet TVs built to the National Television Systems Committee ("NTSC") standard 50 years ago can still be used today.

The Commission can not for long avoid choosing whether to require national standards for non-broadcast television. If 11,000 local cable systems are allowed to use 11,000 different modes of digital transmission, channelization, and digital signal security -- or even two or three -- the national market in integrated television receivers and VCRs will be destroyed.

It was the specific intention of the Congress, in compelling this proceeding, to preserve rather than destroy the features of integrated television receivers and VCRs. To preserve, for consumers, the benefit of such features, Congress gave the Commission authority over all means of cable encryption. In the balance of these comments, MECA argues that the Commission can and should use this authority to move toward technical harmony, and the preservation of features, rather than technical entropy, and the eventual destruction of all integrated product features.

I. CABLE COMPATIBILITY, AS REQUIRED BY CONGRESS, MEANS ADDRESSING BOTH NEAR-TERM PROBLEMS AND LONG-TERM CHALLENGES

The Cable Act was enacted in response to consumer complaints about the arbitrary power, over both price and

service, that has accrued to local cable monopolies. Section 17 of the Act, authorizing the Commission to regulate cable compatibility with consumer electronics devices, arose from a pattern of consumer frustration apparent when the most "advanced" cable systems and consumer electronics devices were coupled in the same household.

A. Compatibility Problems Arise from Change and Diversity in Cable Service; Faster and More Fundamental Change Is On the Way

"Basic" cable service is usually provided in a format in which all channels are part of a package purchased by the consumer. All of these channels are available simultaneously and unencrypted, through a cable that is easily compatible with the "antenna" input of a TV or VCR. If the TV or VCR cannot tune the extended number of cable channels, the consumer can use an auxiliary "converter," usually supplied by the cable company, that converts any channel to channel 3 or channel 4.

State-of-the-art TVs and VCRs work well with such basic cable systems. As cable has introduced additional products, however, the basic service paradigm described above has begun to change radically:

- Extra cost "premium" channels are offered, usually with scrambling, a form of encryption[3/] addressed to security,

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[3/] According to Webster's Ninth New Collegiate Dictionary 409-410 (1989), **encrypt** means **encipher**: "to convert (a message) into cipher," or **encode**: "to convert (as a body of information) from one system of communication into another." **Scramble** means "to

(continued...)

to discourage use by those who do not buy these channels, or who do not buy cable service at all;

- Many systems have assigned the de-scrambling function to cable company converter boxes, so no matter how sophisticated the TV or VCR, reception of the premium channels is possible only through the use of the converter box;
- Many systems have offered intermediate packages, or "tiers," of services that must be denied to customers who do not purchase the tier;
- To handle additional channels, and to facilitate pricing of different tiers, systems increasingly are turning to additional modes of encryption, for purposes that include but go beyond security scrambling:
  - Rechannelization -- remapping broadcast channels, to appear as channel numbers that consumers cannot easily relate to broadcast services;
  - Scrambling all channels, not just premium services. This requires the consumer to use a cable company converter box and not rely at all on the TV or VCR tuner;
  - Descrambling and passing only one channel at a time in the converter box. This makes standard

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3/ (...continued)
disarrange the elements of telephone, teletype, facsimile, or television transmissions in order to make unintelligible to interception." Id. at 1054.

VCR practices such as taping one channel while watching another, and the newer TV picture-in-picture feature, useless, because these techniques require two "clear" channels.

- Most systems are clearly headed for additional modes of encryption that are wholly unrelated to signal security:
  - Encryption through signal compression, offering 6 or 8 programs in the slot conventionally assigned to a single NTSC channel;
  - New digital transmission systems, providing a standard resolution picture by means of a transmission system unrelated to NTSC;
  - HDTV transmissions, not necessarily compatible with the system now being developed by the Commission for terrestrial broadcast.

B. Problems to Date Arise from Cable Security-Related Encryption Measures; Future Problems Will Arise Also from Non-Security Encryption Measures

Security-related encryption causes problems for consumers -- reliance on converter boxes, disabling special features -- that were prominently mentioned in the congressional mandate. However, it is the impending non-security-related, additional encryption measures -- scrambling every channel, selecting

congressional concern with the arbitrary nature of local monopoly.

As to the problems that already exist, Congress found:

> [I]f these problems are allowed to persist, consumers will be less likely to purchase, and electronics equipment manufacturers will be less likely to develop, manufacture, or offer for sale, television receivers and video cassette recorders with new and innovative features and functions."[4/]

Accordingly, Congress provided that "cable operators should use technologies that will prevent signal thefts while permitting consumers to benefit from such features and functions in such receivers and recorders."[5/]

C. Complying With the Act's Purpose Will Mean Addressing Both Security and Non-Security Modes of Encryption

In enacting Section 17, Congress also had the more basic aim of preserving, for consumers, the national market in TVs and VCRs. In introducing his amendment on January 29, 1992, Senator Leahy said:

> The effort to create a user-friendly connection between cable systems and consumer electronics is more important now than ever before. New technologies that are beginning to come on line -- such as digital compression, which packs more programs onto a single channel -- will force more and more consumers to rent converter boxes and lose the full benefits of their televisions and VCR's. The time to insist on new standards that will create

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[4/] Cable Act § 17(a)(2), 47 U.S.C. § 544a(a)(1).

[5/] Id. § 17(a)(3), 47 U.S.C. § 544a(a)(3).

a consumer-friendly environment for years to come is now.

It is to address pending and potential complications in

[redacted]

D. TV and VCR Manufacturers Have Obligations, As Well

We cannot expect that the cable industry will receive the discipline of technical standards yet consumer electronics products will change not at all. MECA, and we believe the entire consumer electronics industry, is enthusiastic about technical progress, new modes of transmission, and increased options for consumers.

To the extent that sophistication in cable standards will require product improvements, MECA expects to remain in the lead in advancing the state of the art. Television and VCR manufacturers are obliged to make tuners robust enough to handle cable signals, yet still sensitive enough to tune broadcast signals. MECA and other manufacturers continue to do this successfully. But as technology progresses, only new technical signal standards, developed with the cooperation of cable providers and receiver manufacturers, can preserve this dual capability of TV and VCR tuners.

Areas in which cooperative refinement of standards will aid in tuner design and performance include direct pick-up (DPU) interference, image rejection, local oscillator (LO) voltage leakage, and termination impedance. Additionally, protocols for channel mapping need to be standardized, to allow television and VCR designers to assist consumers in tuning familiar broadcast channels over re-channelized cable systems. Manufacturers need to know the level of performance that is required in the field for many of these cable-related specifications. Parameters need to be defined,

acceptable levels quantified, and test procedures established. If specifications in these areas are chosen with consumer convenience in mind, TV and VCR designers will be able to continue to include broadcast and non-broadcast reception capability in their tuners. MECA recognizes that adjustment to new standards will impose some costs on TV and VCR manufacturers. We believe that if the standards are well-conceived and consumer-friendly, these improvements will be well worth the ultimate cost to consumers.

II. NEAR-TERM COMPATIBILITY REQUIRES INNOVATION IN SECURITY AND STANDARDIZATION IN TRANSMISSION

Much can and should be done in the short term to alleviate the specific problems about which consumers have complained. There are methods at hand that can solve present problems, and lay the groundwork for future standards.

Short-term approaches to compatibility must start with the needs of consumers who have already purchased, and use every day, about 200 million color television receivers and about 100 million VCRs. The only way to give full function to this consumer investment, as well as to brand-new TVs and VCRs, is for cable companies to deliver signals to the household so that all purchased signals are simultaneously available in a standardized format. Any descrambling (security decoding) not capable of being performed by today's TVs and VCRs must be done at point of entry to the home.

For those consumers with older TVs or VCRs that cannot tune a standard number of available channels, a competitive market in ancillary devices (which would not require any security function) is necessary. Both of these objectives can and should be accomplished in this proceeding.

A. Security Systems, in the Near Term, Require Point-of-Entry Approaches

Cable operators successfully have used a variety of security systems that do not pose compatibility problems for TVs and VCRs -- negative traps, positive traps, addressable traps, and "interdiction." They also have used "scrambling" techniques -- synch suppression, phase modulation, video inversion, and combinations thereof. Scrambling has been favored in sophisticated systems because it allows flexibility in offering different levels of service. Unfortunately, it has been offered through set-top "boxes" that "descramble" only one channel at a time.

Descrambling and passing[8/] one channel at a time makes even the best TV or VCR tuner useless and redundant. This practice of rationing to the consumer, one at a time, all of the channels the consumer has purchased is a direct cause of the inconveniences described in Section 17 of the Cable Act.

[8/] Most converter boxes, whether they descramble or not, pass only one channel at a time. This inconvenience to consumers is a reason why the Commission should go as far as possible to eliminate, after point of entry, not only scrambling, but converter boxes as well.

Fortunately, there are cable security technologies at hand that offer the consumer only the channels he or she is paying for, all at once rather than one at a time. Traps, interdiction, and new multichannel descrambling methods allow cable companies to levy flexible charges, yet permit consumers to avoid inconvenience and redundancy.

Within the next seven years, the generation of cable converters presently in use is likely to be substantially replaced.[9/] Cable systems should be required, within less time than this, to move to systems that provide to the consumer, simultaneously, all the signals that have been purchased. To accomplish this objective, no standardization

B. Channelization and Transmission Require Standardization

There is no signal security concern that compels cable companies to take non-standard approaches to channel frequency

Commission should not allow departures from NTSC until standards for compression and transmission have been adopted. As Senator Leahy said, the time to act is now.

III. LONG-TERM COMPATIBILITY AND COMPETITION REQUIRE NATIONAL STANDARDS

The advent of digital technology promises fundamental change because digital techniques offer greater numbers of programs per channel, subject to greater control as to levels of service. Digitization also offers new signal security options. MECA welcomes technological advances, provided they are subject to standards that preserve compatibility.

Setting standards for cable encryption, through this proceeding, will allow the Commission to exercise appropriate influence over a key element of the future network of audiovisual signal delivery. Already, the Commission is supervising the introduction of HDTV service to terrestrial broadcasts. There is no reason for future cable industry implementation of HDTV to be incompatible. Similarly, the Commission will be in a position to achieve maximum compatibility between cable and other non-terrestrially-broadcast program delivery services.

A. Non-Security Encryption Modes Must Be Standardized

In the old Western movies, the gang being chased by the posse yells "break up," and small groups ride off in several directions. The posse, if it is to follow, must disintegrate.

If cable signals can flee from the national NTSC standard and into local frequencies, picture coding, compression, and modulation, the national market in TVs and VCRs must, similarly, be scattered.

There is no valid reason for technological compatibility between cable and TVs and VCRs, to be lost as a byproduct of technological progress. As we have emphasized, the impending changes to cable frequency, picture coding, compression, and modulation have nothing to do with security (although, as we will discuss, digitization offers an additional approach to security). Rather, these changes represent potential advances in efficient delivery of greater numbers of programs per channel, through digital encryption.

In Section 17, Congress gave the Commission authority over cable industry encryption to the extent that such encryption interferes with consumer electronics product features. To encrypt, or encode, is to convert from one system of communication into another.[11/] This, precisely, is what the cable industry is about to do. If it does so according to non-standardized methods, this will definitely interfere with the very tuner-related consumer electronics features that Section 17 seeks to preserve.

The Commission should require that standard frequencies, picture coding, compression, modulation, and multiplexing methods be established, based on the concept of a national

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11/ See note 3 supra

renewable encryption standard, for any cable service that departs from NTSC. For consumers, this will have the following benefits: (1) new TVs and VCRs will then be built to process the new encryption mode directly, to avoid all compatibility problems associated with the necessity for converters; and (2) those with NTSC TVs will have the benefit of an open market in converters from digital cable encoding to NTSC encoding.[12/] Senator Leahy emphasized the benefits of competition in offering consumers new features, improved products, and lower prices.

Bringing the benefits of compatibility and competition to consumers is the ultimate goal of this proceeding. MECA stands ready to cooperate in the fashioning of the new standards that will accomplish this goal. As a member of the Electronic Industries Association, MECA is confident that cooperative efforts between the cable and consumer electronics industries can result in quick progress.

B. Security Encryption Modes Can Also Be Standardized

The transition to digital technology also provides an opportunity, if there is a need, to devise national standards for means of encryption used for security purposes. To the extent such techniques prove necessary, MECA is confident that

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[12/] Once frequency and signal standards have been set, new TVs and VCRs can be designed compatibly in each respect. To assist older sets, "universal" converter boxes can be offered at retail that would operate in any channel-mapped environment.

consumer electronics products can incorporate the necessary hardware and software. However, the successful nationwide installation of point-of-entry control over security, discussed above, might make such techniques cumulative in effect.

The inherent coding capacity and flexibility of digital technology would allow security systems to follow a national encryption standard, with innumerable designated, renewable security codes and coding methods. That is, digital cable security systems would all speak the same language, but each cable system would have its own, ever-changing, "secret passwords" and methods.

Therefore, <u>if</u> cable systems eventually are permitted to adopt security measures beyond those established at point of entry, by providing for security through coding in the digital signal itself, then such encoding and decoding should also be standardized nationally. Consumer electronics equipment will be able to incorporate the necessary hardware and programming features to play an appropriate role in such a system, while allowing the individual system operator to "renew" the security system in the event of a compromise in security. Security concerns ought not be a reason to re-impose converter boxes on consumers.

C. Cable Digital Encryption Standards Should Be Designed for Maximum Compatibility With Broadcast and Other Services

We have emphasized that, rather than starting with the particular needs or plans of industry, the Commission ought to focus initially on the outcomes that will best serve the consumer. We have argued that consumer interest requires that electronics equipment should continue to be able to tune both broadcast and non-broadcast signals. Implicit in this goal is future compatibility between new forms of broadcast and cable encryption, and between cable and other non-broadcast television services.

The Commission is in the process of regulating all facets of a new transmission standard for HDTV. There is no reason to resurrect TV and VCR compatibility problems in the HDTV environment by allowing departures from such new standards. Already there are industry discussions on requirements of carrying broadcast HDTV signals over cable. In this proceeding, the Commission should take a step farther and assure that any HDTV signals that are not broadcast-originated use the same transmission (including picture coding) and channelization system as broadcast HDTV signals.

Services other than cable will also be offering HDTV and standard resolution signals. Ultimately, the Commission should seek to avoid future consumer compatibility problems, in cases where consumers subscribe to cable and some other service, as well. At the present stage of this proceeding it would be premature to attempt to spell out the goals and